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VEHICLE ROUTE OPTIMIZATION AND EFFECTIVE WASTE COLLECTION PROCESS IN KHULNA CITY: CASE STUDY ON KHALISHPUR THANA

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ABSTRACT

Over 1.4 million people are residing in Khulna metropolitan city within 47 km^2. According to Khulna City Corporation (KCC), on an average of 475 tons of waste is generated per day, waste is removed two times a day, masonry collection point is nearly about 1200, there are another 150 larger collection points around the whole metropolitan area. Average compostable portion of the waste in KCC area is estimated as 78% while the non-compostable portion is 22%. The idea is to fit 78% compostable waste, which is about 370 tons/day. Solid Waste Management (SWM) is a noteworthy procedure where waste collection process plays a vivacious role in progressive metropolitan city like Khulna. Solid waste (SW) collection reflects the quality of life of that city or community. Around the city overall waste collection process is managed by Khulna City Corporation (KCC). This research contains computation of a possible amount of wastes generating in every neighborhood and plan and Software based monitoring of a collection process bringing all the neighborhood throughout whole Khalishpur area in an eco-friendly manner under SWM. Optimized routing for collector vehicles to provide services most of the part of city and dumping or reusing by further processing of these solid wastes. In this research, Geographic Information System (GIS) based time efficient and cost effective route had been executed from door to door daily waste disposals to larger dumping stations of all forms of waste collector vehicles throughout whole Khalishpur area in an eco-friendly manner. The software (GIS) was used to determine optimal routes for small collection groups and outlines the workflow and best practices for future analysis.
Key words: KCC, SWM, GIS, compostable waste, eco-friendly, dumping station.